

RESPONSE AND REQUEST FOR RECONSIDERATION

Support.

The claims are amended to provide an upper limit of about 0.05% for component (a). Support is found in paragraph 0017. The claims also specify that component (b)(i) is phosphoric acid or phosphorous acid (or, implicitly, a mixture of these acids). Support is found in original claim 6. Component (b)(ii) is now defined as a dialkyl hydrogen phosphite. Support is in original claim 7.

Response.

The Examiner has substantially repeated the rejection previously made. Further, upon consideration of the information presented in the Declaration of Mr. Waters, the Examiner concluded that advantages were demonstrated, but they were not commensurate in scope with the breadth of the claims. He was also concerned whether the benefits would exist at a concentration of terephthalic acid of 0.1%. The Examiner also noted that the samples tested contained 6% of a succinimide dispersant, compared with an upper limit of 4.8% in claim 11.

Let us address the last concern first, the concentration of succinimide dispersant in relation to claim 11. In the Declaration of Mr. Waters, the amount of succinimide dispersant used, 6%, is explicitly noted as “Amounts containing conventional diluent oil.” (page 3, footnote). It is well known in the lubricant art that many additives, and succinimide dispersants in particular, in their commercial form, contain diluent oil, and that the conventional amount of diluent oil in succinimide dispersants is roughly 40%. This is evidenced in Table I in the specification, which explicitly states “Succinimide dispersants, borated + non-borated, incl. ca. 42% oil”. Factoring out the ~40% oil from the 6% dispersant reported leaves about 3.6% active chemical, which is squarely within the limits of claim 11.

Turning to the question of breadth of other elements of the claims, the present amendment have brought the claims to within a fair and reasonable breadth of the examples which show the advantage. In particular, the original “inorganic phosphorus acid or salt thereof” is replaced by “phosphoric acid or phosphorous acid.” That is, the acid rather than the salt form is specified, and the two phosphorus-oxygen acids are specified, as opposed to, say, various thiophosphorus acids. It is submitted that this provides a reasonable scope of protection around the commercial phosphoric acid that was tested. (Phosphoric acid is commercially available as the 85% concentrate.)

Similarly, the “aliphatic phosphorus ester” is now replaced by “dialkyl hydrogen phosphite.” This represents a reasonable breadth about the actually tested material, dibutyl hydrogen phosphite.

Finally, as to the amount of the terephthalic acid, this is now specified as 0.0001 to 0.05% (or 0.001 to 0.05% in claim 4). The amounts tested in the Declaration of Mr. Waters ranged from 0.0012 to 0.05%. The amount of 0.1%, for which the Examiner had questioned the efficacy, is not now claimed.

Therefore, it is believed that the claims as amended are now of correct and reasonable scope in comparison with the data that has been presented.

The Examiner also queried the distinction between using the phosphoric (or phosphorous) acid of the present invention versus the phosphorus-containing salts of Hotten, Tomaro, or Suyama. Each of these documents disclose the presence of a zinc dialkyldithiophosphate (ZDP). These disclosure are thus distinguished from the present materials in that the ZDPs are salts, rather than acids, and also they are based on thiophosphoric acid rather than phosphoric or phosphorous acid. ZDPs are conventional additives that are useful for a variety of purposes, but the data that has been presented in the present prosecution makes it apparent that ZDP is not useful for the present purpose of solubilizing terephthalic acid. Referring again to the Declaration of Mr. Waters, each of the formulations tested contains 5.34 percent (less a small amount of oil) of zinc dialkyldithiophosphate. It is seen that the presence of this salt does not impart solubility to the terephthalic acid. The formulations with which the phosphoric acid was not premixed, according to the present invention, do not show good solubility of the terephthalic acid, despite the presence of the ZDP. Only those formulations which were prepared according to the present invention exhibit the enhanced solubility. Accordingly, the fact that ZDP is known in lubricant formulations does not make the present claims obvious.

Conclusion.

For the foregoing reasons it is submitted that the present claims are in condition for allowance. The foregoing remarks are believed to be a full and complete response to the outstanding office action. Therefore an early and favorable reconsideration is respectfully requested. If the Examiner believes that only minor issues remain to be resolved, a telephone call to the Undersigned is suggested.

Any required fees or any deficiency or overpayment in fees should be charged or credited to deposit account 12-2275 (The Lubrizol Corporation).

Respectfully submitted,

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